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COLUMBIA, SOUTH CAROLINA

May 23, 2008

**VIA ELECTRONIC FILING**

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Public Service Commission of South Carolina  
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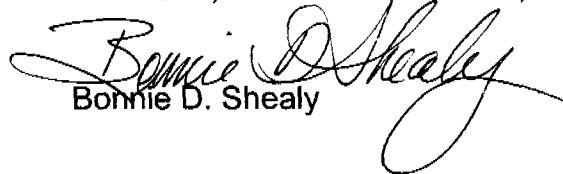
**Re: Duke Energy Carolinas, LLC Application for Approval of Decision to  
Incur Nuclear Generation Pre-construction Costs  
Docket No. 2007-440-E**

Dear Mr. Terreni:

Enclosed for filing please find Duke Energy Carolinas, LLC's proposed order Approving its Decision to Incur Nuclear Generation Pre-Construction Costs. By copy of this letter we are serving the same on the parties of record. By separate email we will provide a copy of proposed order to you in Word format. If you have any questions, please have someone on your staff contact me.

Very truly yours,

ROBINSON, MCFADDEN & MOORE, P.C.

  
Bonnie D. Shealy

BDS/tch  
Enclosures

cc/enc: Mr. Kodwo Ghartey-Tagoe, VP Legal, State Regulation (via email)  
Lawrence B. "Bo" Somers, Associate General Counsel (via email)  
Nanette Edwards, Esquire (via email & U.S. Mail)  
C. Lessie Hammonds, Esquire (via email & U.S. Mail)  
Scott A. Elliot, Esquire (via email & U.S. Mail)  
Robert Guild, Esquire (via email & U.S. Mail)  
John M. Bowen, Jr. Esquire (via email & U.S. Mail)  
Randall Dong (via email)  
Joseph Melchers (via email)

## STATE OF SOUTH CAROLINA

BEFORE THE  
PUBLIC SERVICE COMMISSION  
OF SOUTH CAROLINA

In the Matter of

## COVER SHEET

Application of Duke Energy Carolinas, LLC for  
Approval of Decision to Incur  
Nuclear Generation Pre-Construction CostsDOCKET  
NUMBER: 2007-440-E

(Please type or print)

Submitted by: Bonnie D. Shealy, EsquireSC Bar Number: 11125Address: Robinson, McFadden & Moore, P.C.  
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NOTE: The cover sheet and information contained herein neither replaces nor supplements the filing and service of pleadings or other papers as required by law. This form is required for use by the Public Service Commission of South Carolina for the purpose of docketing and must be filled out completely.

## DOCKETING INFORMATION (Check all that apply)

☐ Emergency Relief demanded in petition
 ☐ Request for item to be placed on Commission's Agenda expeditiously

☐ Other: \_\_\_\_\_

INDUSTRY (Check one)	NATURE OF ACTION (Check all that apply)		
<input checked="" type="checkbox"/> Electric	<input type="checkbox"/> Affidavit	<input type="checkbox"/> Letter	<input type="checkbox"/> Request
<input type="checkbox"/> Electric/Gas	<input type="checkbox"/> Agreement	<input type="checkbox"/> Memorandum	<input type="checkbox"/> Request for Certification
<input type="checkbox"/> Electric/Telecommunications	<input type="checkbox"/> Answer	<input type="checkbox"/> Motion	<input type="checkbox"/> Request for Investigation
<input type="checkbox"/> Electric/Water	<input type="checkbox"/> Appellate Review	<input type="checkbox"/> Objection	<input type="checkbox"/> Resale Agreement
<input type="checkbox"/> Electric/Water/Telecom.	<input type="checkbox"/> Application	<input type="checkbox"/> Petition	<input type="checkbox"/> Resale Amendment
<input type="checkbox"/> Electric/Water/Sewer	<input type="checkbox"/> Brief	<input type="checkbox"/> Petition for Reconsideration	<input type="checkbox"/> Reservation Letter
<input type="checkbox"/> Gas	<input type="checkbox"/> Certificate	<input type="checkbox"/> Petition for Rulemaking	<input type="checkbox"/> Response
<input type="checkbox"/> Railroad	<input type="checkbox"/> Comments	<input type="checkbox"/> Petition for Rule to Show Cause	<input type="checkbox"/> Response to Discovery
<input type="checkbox"/> Sewer	<input type="checkbox"/> Complaint	<input type="checkbox"/> Petition to Intervene	<input type="checkbox"/> Return to Petition
<input type="checkbox"/> Telecommunications	<input type="checkbox"/> Consent Order	<input type="checkbox"/> Petition to Intervene Out of Time	<input type="checkbox"/> Stipulation
<input type="checkbox"/> Transportation	<input type="checkbox"/> Discovery	<input type="checkbox"/> Prefiled Testimony	<input type="checkbox"/> Subpoena
<input type="checkbox"/> Water	<input type="checkbox"/> Exhibit	<input type="checkbox"/> Promotion	<input type="checkbox"/> Tariff
<input type="checkbox"/> Water/Sewer	<input type="checkbox"/> Expedited Consideration	<input checked="" type="checkbox"/> Proposed Order	<input type="checkbox"/>
<input type="checkbox"/> Administrative Matter	<input type="checkbox"/> Interconnection Agreement	<input type="checkbox"/> Protest	
<input type="checkbox"/> Other:	<input type="checkbox"/> Interconnection Amendment	<input type="checkbox"/> Publisher's Affidavit	
	<input type="checkbox"/> Late-Filed Exhibit	<input type="checkbox"/> Report	

**BEFORE  
THE PUBLIC SERVICE COMMISSION  
OF SOUTH CAROLINA**

**DOCKET NO. 2007-440-E – ORDER NO. 2008-\_\_**

**June \_\_\_\_\_, 2008**

In Re:	)	<b>Order Approving Application</b>
	)	<b>of Duke Energy Carolinas,</b>
Application of Duke Energy Carolinas, LLC	)	<b>LLC's Decision to Incur</b>
For Approval of Decision to Incur Nuclear	)	<b>Nuclear Generation Pre-</b>
Generation Pre-Construction Costs	)	<b>Construction Costs</b>
	)	<b>(proposed order of Duke</b>
	)	<b>Energy Carolinas, LLC)</b>
	)	

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**I. INTRODUCTION AND PROCEDURAL HISTORY**

This matter comes before the Public Service Commission of South Carolina ("Commission") by way of the Application filed on December 7, 2007, by Duke Energy Carolinas, LLC ("Duke Energy Carolinas" or "Company") pursuant to S.C. Code Ann. § 58-33-225 for approval of Duke Energy Carolinas' decision to incur pre-construction project development costs for the Company's proposed William States Lee, III Nuclear Station in Cherokee County, South Carolina ("Lee Nuclear Station"). The Company incurred pre-construction costs of approximately \$70 million through December 31, 2007, and estimated that it will incur up to an additional \$160 million for the period January 1, 2008, through December 31, 2009. In this Application Duke Energy Carolinas is seeking Commission approval to conduct the necessary development work to ensure that the Lee Nuclear Station remains an option to serve customer needs in the 2018 timeframe.

The Commission's Docketing Department instructed Duke Energy Carolinas to publish, one time, a Notice of Filing and Hearing in newspapers of general circulation in the areas of the State affected by the Application. The Notice of Filing and Hearing indicated the nature of the Company's Application and advised all interested parties desiring to participate in the scheduled proceeding of the manner and time in which to file the appropriate pleadings. The Company was also required to directly notify all customers. The Company furnished affidavits demonstrating that the Notice was duly published in accordance with the Docketing Department's instructions and certified that a copy of the Notice was mailed to each affected customer.

The S.C. Energy Users Committee ("SCEUC"), represented by Scott Elliott, Esquire, filed a Petition to Intervene on January 31, 2008. Friends of the Earth ("FoE"), represented by Robert Guild, filed a Petition to Intervene on March 3, 2008. The petitions were not opposed. The Office of Regulatory Staff ("ORS"), automatically a party pursuant to S.C. Code Ann. § 58-4-10(B) (Supp. 2007), was represented by C. Lessie Hammonds, Esquire and Nanette S. Edwards, Esquire. M. John Bowen, Jr., Esquire, Margaret M. Fox, Esquire, and Sue-Ann Gerald Shannon, Esquire filed a Notice of Limited Appearance on behalf of Westinghouse Electric Co., LLC, and Stone & Webster, Inc. ("Westinghouse/S&W") for the limited purpose of protecting the disclosure of certain commercially-sensitive documents in the proceeding that belonged to Westinghouse/S&W. Duke Energy Carolinas was represented by Frank R. Ellerbe, III, Esquire and Bonnie D. Shealy, Esquire, of Robinson, McFadden & Moore, P.C. and Lawrence Bowen Somers, Esquire, and Kodwo Ghartey-Tagoe, Esquire, attorneys for Duke Energy Corporation. On February 20, 2008, the Commission issued Order No.

2008-100 granting *pro hac vice* admission for Mr. Somers and Mr. Gharthey-Tagoe. Collectively, SCEUC, FoE, ORS, and Duke Energy Carolinas are referred to as “the Parties” or individually as a “Party.”

The pre-filed direct testimony of Ellen T. Ruff, President of Duke Energy Carolinas; Dhiaa M. Jamil, Group Executive and Chief Nuclear Officer for Duke Energy Carolinas; and Janice D. Hager, Managing Director of Integrated Resource Planning and Environmental Strategy for Duke Energy Corporation, were filed by the Company on March 6, 2008. Pre-filed testimony of Nicholas Phillips, Jr. was filed by ORS on March 20, 2008. Pre-filed testimony of Peter A. Bradford was filed by FoE on March 20, 2008. On April 2, 2008, the Company filed the Rebuttal Testimony of Dr. Julius Wright, President of J.A. Wright & Associates, Inc. FoE filed the Surrebuttal Testimony of Mr. Bradford on April 13, 2008.

The hearing in the case began on Tuesday, May 6, 2008, during which time Duke Energy Carolinas’ witness Janice Hager presented her testimony in which she discussed how the Integrated Resource Planning process for the 2007 Duke Energy Carolinas annual Plan, filed in docket No. 2005-356-E, demonstrates that the Company should continue the development of the Lee Nuclear Station. Counsel for FoE repeatedly questioned Ms. Hager regarding her analysis of costs related to the facility to which Duke Energy Carolinas objected. Counsel for FoE and for Duke Energy Carolinas argued as to whether the information should be disclosed to the public. The Commission ruled that no internal analysis of costs that had not been revealed publicly would be subject to disclosure without a confidentiality agreement in place.

The hearing continued on Wednesday, May 7, 2008, during which time FoE's witness Peter A. Bradford presented his direct and surrebuttal testimony in which he contended that the Company could not establish the prudence of its decision to incur preconstruction costs without providing reliable evidence of the cost of the unit and its impact on rates. The hearing reconvened on Monday, May 12, 2008, at which time Duke Energy Carolinas presented the direct testimony of Ellen T. Ruff and Dhiaa M. Jamil and the rebuttal testimony of Julius A. Wright. Ms. Ruff discussed the importance of the requested approval to the Company and how its proposed Lee Nuclear Station fits into the Company's strategic plans to meet customers' needs for reliable, cost-effective electricity while modernizing its fleet, increasing diversity among generation resources, reducing its environmental footprint, and increasing its energy efficiency and conservation programs and promotion of renewable resources.

Mr. Jamil discussed the development work performed and costs incurred to date by Duke Energy Carolinas for the Lee Nuclear Station. He also described the anticipated development work. At the hearing, Mr. Jamil was questioned by Commissioner Moseley about the cost of the plant. Duke Energy Carolinas requested that the Commission protect the cost estimate information from public disclosure to protect the Company's ability to negotiate the lowest possible total cost. In addition to arguments by Duke Energy Carolinas' counsel, Mr. Jamil further explained the importance of protecting the cost information. The Commission closed the hearing to the public to prevent disclosure of the confidential cost estimates.

Dr. Wright testified to the statutory process which provides multiple avenues for Commission review and approval of costs related to new nuclear generation, and his

belief that the Company's application should be approved. ORS witness Mr. Phillips testified to his opinion that Duke Energy Carolinas' decision to incur pre-construction costs to preserve new nuclear generation as a resource option is reasonable and prudent.

On May 14, 2008, the Company filed Duke Energy Carolinas Late-Filed Exhibit No. 3, providing detail behind Duke Energy Carolinas' estimated \$230 million in Lee Nuclear pre-construction costs through December 31, 2009, as requested by the Commission.

Based upon consideration of the pleadings, testimony, and exhibits received into evidence at the hearing, and the record as a whole, the Commission makes the following:

## **II. FINDINGS OF FACT AND CONCLUSIONS OF LAW**

1. Duke Energy Carolinas, LLC is a public utility with a public service obligation to provide electric utility service to customers in its service area in South Carolina and is subject to the jurisdiction of the Commission.

2. The Commission has jurisdiction over this Application pursuant to S.C. Code Ann. § 58-33-225, which grants the Commission the authority to approve a utility's decision to incur project development costs for a nuclear facility.

3. Duke Energy Carolinas' 2007 Annual Plan filed with this Commission in Docket No. 2005-356-E shows substantial load growth and the need for significant capacity additions to meet Duke Energy Carolinas customers' needs over the next twenty years. The 2007 Annual Plan shows a cumulative need for approximately 7,000 MW of additional capacity by 2018, which grows to approximately 10,700 MW of additional capacity by 2027. The Company's 2007 Annual Plan also reflects the retirement of

approximately 1,000 MW of older, less-efficient coal units as part of the commitments related to the approval of the Company's advanced clean coal Cliffside Unit 6.

4. In the 2007 Annual Plan, Duke Energy Carolinas developed portfolios which included energy efficiency programs, demand-response programs, renewable resources, natural gas, advanced clean coal and nuclear generation resources to reliably and cost-effectively meet customer needs. The Company tested all of its supply and demand-side resource portfolio options against a wide range of sensitivities and scenarios, including the possibility of future carbon regulation. The quantitative and qualitative analysis conducted as part of the Company's 2007 integrated resource planning process demonstrates that the addition of the Lee Nuclear Station in the 2018 timeframe has significant value for customers under multiple scenarios. Of the base load resource options available, nuclear generation is the only viable resource with no carbon dioxide (CO<sub>2</sub>) or other greenhouse gas emissions.

5. The Company's need for new base load generation resources over the next decade, combined with the need for greater fuel diversity and a commitment to reducing Duke Energy Carolinas' carbon footprint, make the continued evaluation and development of new nuclear generation an essential part of future resource planning. While nuclear power is undergoing a revival, there are substantial hurdles to the development of new nuclear power generation which create a significant amount of uncertainty. The assurance sought in the Application is therefore critical to maintaining nuclear generation as a viable option for the Company's customers.

6. The Lee Nuclear Station would be constructed in Cherokee County. Duke Energy Carolinas has selected the Westinghouse AP1000 reactor technology, which is an



advanced nuclear power generation technology that uses the forces of nature and simplicity of design to enhance plant safety and operations, and reduce construction costs. Each unit has an anticipated generation capacity of 1,117 MW, and the projected annual capacity factor of the Lee Nuclear Station is expected to exceed 90% based upon current Duke Energy Carolinas nuclear fleet performance.

7. Duke Energy Carolinas incurred approximately \$70 million in project development costs through December 31, 2007. The Company estimates that it will need to incur up to \$160 million in Lee Nuclear Station project development costs during the period January 1, 2008, through December 31, 2009, in order to continue the necessary pre-construction work to preserve the Lee Nuclear Station as an option in the 2018 timeframe.

8. Payments required to ensure the timely fabrication and delivery of long-lead procurement items such as Reactor Coolant Pumps, Containment Vessel, Reactor Pressure Vessel, Steam Generators, Control Rod Drive Mechanisms and Condenser Circulating Water Piping for the Lee Nuclear Station would qualify as "project development costs" to the extent that those costs are incurred prior to the issuance of a certificate of public convenience and necessity by the Public Service Commission of South Carolina. No payments towards these long lead items have been made to date and the Company estimates that the amount of such payments may be approximately \$10 million through the end of 2009. See Exhibit 3. It is reasonable and prudent for Duke Energy Carolinas to incur these long-lead procurement obligations and costs.

9. Duke Energy Carolinas' decision to incur the South Carolina-allocable portion of Lee Nuclear Station project development costs is reasonable and prudent, and

is approved. The Commission agrees with Duke Energy Carolinas that preserving the option of new nuclear generation is valuable for the Company's customers and for the future of the State of South Carolina, and is therefore in the public interest.

### **III. EVIDENCE AND CONCLUSIONS**

The evidence and conclusions supporting the findings of the Commission in this matter are as follows:

#### **A. EVIDENCE AND CONCLUSIONS CONCERNING THE COMPANY'S LEGAL STATUS AND JURISDICTION**

##### **FINDING Nos. 1-2**

The evidence in support of these findings of fact is found in the Application of Duke Energy Carolinas, LLC for Approval of Decision to Incur Nuclear Generation Pre-Construction Costs, the pleadings, testimony and exhibits in this docket, and the statutes, case law, and rules governing the authority and jurisdiction of this Commission. These findings are informational, procedural, and jurisdictional in nature.

S.C. Code Ann. § 58-33-225 provides for preconstruction cost review for a nuclear facility:

At any time before the filing of an application or a combined application under this act related to a specific plan, a utility may file a project development application with the commission and the Office of Regulatory Staff. ...The Commission shall issue a project development order affirming the prudence of the utility's decision to incur preconstruction costs for the nuclear plant specified in the application if the utility demonstrates by a preponderance of the evidence that the decision to incur preconstruction costs for the plant is prudent. In issuing its project development order, the commission may not rule on the prudence or recoverability of specific items of costs, but shall rule instead on the prudence of the decision to incur preconstruction costs for the nuclear plant....

S.C. Code § 58-33-225(B) & (D). Duke Energy Carolinas has not filed an application for a certificate to construct the Lee Nuclear Station with the Public Service Commission of South Carolina; in fact, the Company has not made a final decision whether to pursue construction of the Lee Nuclear Station. Therefore, the Commission has the authority to review Duke Energy Carolinas' Application and to approve the Company's decision to incur nuclear preconstruction costs.

**B. EVIDENCE AND CONCLUSIONS RELATED TO CAPACITY**

**FINDING No. 3**

The evidence in support of this finding is based upon the 2007 Duke Energy Carolinas Annual Plan and the testimony and exhibits of Duke Energy Carolinas witnesses Ruff and Hager.

Ellen T. Ruff, President of Duke Energy Carolinas, testified that over the past five years Duke Energy Carolinas has added approximately 50,000 new customer accounts each year, with each account typically representing a greater number of actual users of electricity at each location. (Tr. Vol. 4, p. 323). Janice D. Hager, Duke Energy's Managing Director of Integrated Resource Planning and Environmental Strategy, offered extensive testimony as to the annual planning process that led to the development of the Duke Energy Carolinas 2007 Annual Plan and the decision to continue to evaluate and develop new nuclear generation. Witness Hager testified that the Company develops and files an annual resource plan based upon a 20-year load forecast and a target planning reserve margin of 17%. (Tr. Vol. 2, p. 98). Ms. Hager explained that the Company's current load forecast reflects a 1.6 percent average annual growth rate in summer peak demand, and a 1.4 percent average annual growth rate in winter peaks and total energy

usage. (Tr. Vol. 2. p. 99). This equates to an average annual growth rate of approximately 350 MWs per year of energy. (*Id.*). No Intervenor offered any evidence to contradict the Company's load forecast.

The Company's 2007 Annual Plan also reflects the retirement of approximately 1,000 MW of older, less-efficient coal units as part of the commitments related to the approval of the Company's advanced clean coal Cliffside Unit 6, and retirement of approximately 500 MW of older gas/oil combustion turbine units. (Tr. Vol. 2, p. 104). Witness Hager testified that each MW of capacity that is no longer available must be replaced with new capacity, either from supply-side or demand-side resources. (Tr. Vol. 2, p. 99). Witness Hager went on to point out that the need for additional capacity grows over time due to load growth, unit capacity adjustments, unit retirements, existing Demand-Side Management program reductions, and expirations of purchased-power contracts. *Id.* The need grows to approximately 7,000 MW by 2018 and to 10,700 MW by 2027. *Id.*

### **C. EVIDENCE AND CONCLUSIONS – ADDITION OF LEE NUCLEAR**

#### **FINDING No. 4**

The evidence in support of this finding is based upon the 2007 Duke Energy Carolinas Annual Plan and the testimony of Duke Energy Carolinas witness Hager.

Witness Hager explained how Duke Energy Carolinas' resource planning process takes into account a wide range of assumptions and uncertainties in order to develop an action plan that preserves the options necessary to meet customers' needs. (Tr. Vol. 2, p. 102). According to Ms. Hager's testimony, key uncertainties considered in the 2007 Annual Plan include, *inter alia*, elasticity of demand for electricity, environmental regulations such

as carbon costs, whether the region is ready for a nuclear revival, the timeframe needed to license and build nuclear plants, what level of certainty can be established with respect to the capital costs of a new nuclear power plant, if and what type of carbon legislation will be passed, whether utilities be able to secure sufficient renewable resources to meet renewable portfolio standards and whether a federal standard be set, whether Demand-Side Management (“DSM”) and Energy Efficiency (“EE”) can deliver the anticipated capacity and energy savings reliably, whether customers are ready to embrace energy efficiency, the availability and cost of building materials, and gas prices. (Tr. Vol. 2, p. 100-102.). Witness Hager testified that the Company believes that prudent planning for customer needs requires a plan that is robust under many possible future scenarios, and maintains a number of options to respond to many potential outcomes of major planning uncertainties (e.g., federal greenhouse gas emission legislation). (Tr. Vol. 2, p. 103). As a result, Duke Energy Carolinas’ 2007 Integrated Resource Planning (“IRP”) analysis considered two scenarios: a Reference Case without carbon dioxide (“CO<sub>2</sub>”) regulation (the “Reference Case”); and a Carbon Case with CO<sub>2</sub> regulation and a Renewable Portfolio Standard (the “Carbon Case”). (Tr. Vol. 2, p. 102).

Ms. Hager testified that the 2007 integrated resource planning quantitative analyses suggested that a combination of additional base load, intermediate and peaking generation, renewable resources, EE, and DSM programs is required over the next twenty years to reliably and cost-effectively meet customer demand. (Tr. Vol. 2, p. 103). The optimal resource mix is different under different sensitivities. For example, if an assumption is made that there is no carbon regulation on the planning horizon, portfolios without nuclear look best. If an assumption is made assuming carbon regulation with

CO<sub>2</sub> allowances at safety-valve prices, portfolios with one nuclear unit perform well. If higher CO<sub>2</sub> allowance prices are assumed, portfolios with two nuclear units are cost-beneficial to customers. (*Id.*). Witness Hager also testified, however, that the analyses performed did not include the potential value of production tax credits for the nuclear alternatives, which would improve the relative economics of portfolios with nuclear units. (Tr. Vol. 2, p. 103-104).

Under the Reference Case, the portfolio consisting of 3,100 MW of new natural gas combined cycle capacity, 4,052 MW of new natural gas combustion turbine capacity, 1,117 MW of new nuclear capacity, 1,016 MW of Demand-Side Management, and 790 MW of Energy Efficiency was selected. (Tr. Vol. 2, p. 104). Under the Carbon Case, the portfolio consisting of 1,240 MW of new natural gas combined cycle capacity, 3,560 MW of new natural gas combustion turbine capacity, 1,117 MW of new nuclear capacity, 1,016 MW of Demand-Side Management, 790 MW of Energy Efficiency, and 1,135 MW of renewable resources was selected. (*Id.*).

The Company's 2007 IRP screening results demonstrate that the optimal timing of new nuclear varies from 2016 to 2023, depending on assumptions. (Tr. Vol. 2, p. 104). As a result, Witness Hager testified that Duke Energy Carolinas used a 2018 date for modeling purposes and the actual planned operational date of the Lee Nuclear Station may be accelerated or delayed as additional information becomes available. (*Id.*).

Importantly, nuclear is the only viable base load resource with no CO<sub>2</sub> or other greenhouse gas emissions (Tr. Vol. 4, p. 323). Witness Hager testified that because of the possibility that CO<sub>2</sub> allowance prices may be higher than estimated in the base Carbon Case, the 2007 Annual Plan action plan includes licensing for two nuclear units. (Tr. Vol. 2, p.

105.). Witness Hager also noted that while the Company's plan is the most appropriate resource plan at this point in time, good business practice and prudent planning require that Duke Energy Carolinas continue to study the options, and make adjustments as necessary and practical to reflect improved information and changing circumstances. (*Id.*).

**D. EVIDENCE AND CONCLUSIONS - FUTURE RESOURCE PLANNING**

**FINDING No. 5**

The evidence in support of this finding is based upon the evidence supporting Finding No. 4, including the 2007 Duke Energy Carolinas Annual Plan, as well as the testimony and exhibits of Duke Energy Carolinas witnesses Ruff, Hager and Jamil.

Witness Ruff testified that Duke Energy Carolinas is committed to reducing its environmental footprint. (Tr. Vol. 4, p. 321). The Lee Nuclear Station is a key component of Duke Energy Carolinas' comprehensive modernization plan, which also includes increased energy efficiency and demand-response programs, renewable energy resources, new natural gas resources, and the advanced clean coal Cliffside Unit 6. (Tr. Vol. 4, p. 322-323). Importantly, of the base load resource options available, nuclear generation is the only viable resource with no carbon dioxide (CO<sub>2</sub>) or other greenhouse gas emissions. (Tr. Vol. 4, p. 323). Witness Ruff testified that the Company believes that the continued development of the Lee Nuclear Station is even more prudent as a result of the potential for future regulatory carbon constraints. (*Id.*).

Witness Hager testified to the importance of diversity in Duke Energy Carolinas' resource mix. Witness Hager explained that if additional nuclear or coal capacity is not added, the only viable alternative is natural gas-fired generation. (Tr Vol. 2, p. 108-109).

The continued development of the Lee Nuclear Station would allow for continued diversification of resources, which is a benefit to all customers. (Tr. Vol. 2, p. 109).

Dhiaa M. Jamil, Group Executive and Chief Nuclear Officer for the Company, testified regarding Duke Energy Carolinas' current nuclear fleet and operations and discussed the general status of the development of new nuclear generation in the United States. Nuclear generation is undergoing a revival, with between 15 and 20 new nuclear projects planned across the United States by 2020. (Tr. Vol. 4, p. 380). Witness Jamil explained that this renewed interest is attributable to several factors, including (a) a need for new base load generation capacity over the next decade in many areas of the country, most notably in the Southeast; (b) recognition, both internationally and domestically, in the environmental benefits of nuclear generation as the focus on air emissions heightens, particularly as climate change regulation receives greater consideration; (c) the need for American business and industry, for whom the price of electricity can be a significant component of overall operating costs, to remain competitive in global markets as other countries maintain or even increase their reliance on nuclear generation; (d) rising and often volatile prices associated with the fuels used in fossil generation assets, particularly natural gas but also coal; and (e) increasing concerns about our nation's energy security and energy independence. (*Id.*).

According to Mr. Jamil, while all of these factors have led many utilities to announce new nuclear projects over the past couple of years, significant financial, regulatory, and technical challenges remain to be resolved. (Tr. Vol. 4, p. 381). As a result, new federal and state legislation that encourage the development of new nuclear



generation has been enacted, including new laws in North Carolina and South Carolina. (*Id.*).

Today, standardized designs are being proposed for deployment of new nuclear plants and the nuclear regulatory review and approval process has changed to provide for completion of the safety reviews before substantial construction is authorized. (Tr. Vol.4, p. 381). Witness Jamil testified that the combination of these changes should lead to a much higher level of predictability of project cost and schedule; however, this assumption has not yet been demonstrated. Mr. Jamil explained that the key to making this new approach successful will be the quality planning and preparation that is performed in advance of beginning substantial construction, thus necessitating the need to incur significant development costs to assure project success. (Tr. Vol. 4, p. 381-382).

Witness Jamil testified that Duke Energy Carolinas is currently evaluating updated, detailed cost information received from the Westinghouse/Shaw consortium that is delivering the selected AP 1000 technology for the Lee Nuclear Station. (Tr. Vol. 4, p. 384). The Company is working to review this information, as well as the design, engineering and construction costs of the project that will be borne directly by Duke Energy Carolinas. (Tr. Vol. 4, p. 384-385). In addition, the Company has planned an independent third party assessment of the cost information, and expects to complete its cost review in the summer of 2008. (Tr. Vol. 4, p. 385). Witness Jamil testified that Duke Energy Carolinas expects its overall cost estimate for the Lee Nuclear Station to increase as this information is refined during the development process. (*Id.*).

Duke Energy Corporation plans to spend \$23 billion in total on capital projects over the next five years to ensure continued reliable and cost-effective service for its

customers. (Tr. Vol. 4, p. 325). Witness Ruff testified that the Lee Nuclear Station is the largest capital project in the history of Duke Energy Carolinas. Ms. Ruff testified that the assurance sought in the Company's application is critical to the Company's financial well-being and to the ability of the Company's customers to count as an option this more diverse, greenhouse gas emission-free generation source. (*Id.*).

Witness Ruff testified that the Commission's approval of the Company's application in this proceeding is critically important and that if the Commission were to deny the Company's application and determine that the Company's decision to incur project development costs was not prudent, then Duke Energy Carolinas would not proceed with the Lee Nuclear Station project. (Tr. Vol. 4, p. 342).

The Commission agrees with the Company that given the future economic, regulatory and operational uncertainties, particularly whether there will be CO<sub>2</sub> regulation, it is prudent to preserve the option of creating new nuclear generation. If future carbon constraints become a reality, the greenhouse gas-emission-free generation from the Lee Nuclear Station will become an even more valuable resource for the Company's customers. The Commission finds that, in light of the significant benefits flowing from the maintenance of the nuclear generation option, as well as the significant hurdles remaining for the development of that option, the assurance provided by granting the Company's Application is necessary to allow the Company to move forward with the continued development of nuclear generation capability.

**E. EVIDENCE AND CONCLUSIONS – DESCRIPTION OF LEE NUCLEAR STATION**

**FINDING No. 6**

The evidence in support of this finding is based upon the application and the testimony of Company witness Jamil.

Mr. Jamil outlined the details of a potential project at Lee Nuclear Station. Lee Nuclear Station would be constructed in Cherokee County, South Carolina, at the Company's former Cherokee Nuclear Station site. (Tr. Vol. 4, p. 382). Duke Energy Carolinas has selected the Westinghouse AP1000 reactor technology, which is an advanced nuclear power generation technology that uses the forces of nature and simplicity of design to enhance plant safety and operations, and reduce construction costs. (*Id.*). Mr. Jamil demonstrated that the plant would utilize the best components of currently deployed technologies, providing a high confidence that the facility will operate at high levels of safety and reliability. (*Id.*). Each unit has an anticipated generation capacity of 1,117 MW, and the projected annual capacity factor of the Lee Nuclear Station is expected to exceed 90% based upon current Duke Energy Carolinas nuclear fleet performance. (*Id.*).

**F. EVIDENCE AND CONCLUSIONS – DEVELOPMENT COSTS**

**FINDING No. 7**

The evidence in support of this finding is based upon the application and the testimony of Company witnesses Ruff and Jamil.

Witnesses Ruff and Jamil testified that Duke Energy Carolinas incurred Lee Nuclear Station project development costs of \$69.6 million through December 31, 2007. (Tr. Vol. 4, p. 324 & 382). Witness Jamil testified to the details of this development

work included in the categories of Nuclear Regulatory Commission Combined Construction and Operating License Application preparation; land and right-of-way purchases; site restoration and development; and engineering and construction planning. (Tr. Vol. 4, p. 382-385).

Witness Ruff testified that nuclear generation facilities have a very long lead time and much work remains that will require the continued expenditure of significant funds during the development phases. (Tr. Vol. 4, p. 324). Witness Jamil testified that Duke Energy Carolinas anticipates spending up to \$160 million for this necessary project development work for the period January 1, 2008 through December 31, 2009. (Tr. Vol. 4, p. 384). This estimate is based upon the best information available to Duke Energy Carolinas at this time. Witness Jamil testified that as the information is refined during the development process, the estimate could be substantially impacted. (Tr. Vol. 4, p. 385). He also explained that the timing of receipt of a Certificate of Environmental Compatibility and Public Convenience and Necessity ("CPCN") from the Commission for the Lee Nuclear Station would also affect whether certain costs are considered to be project development or construction-related from a regulatory perspective. (*Id.*). Witness Jamil testified that Duke Energy Carolinas will update the Commission on its estimate and schedule periodically, as it does with any major project. (*Id.*).

Witness Jamil supported the estimate of \$160 million by listing the following categories of project development work that are anticipated during calendar years 2008 and 2009 to continue the development of the Lee Nuclear Station:

**Nuclear Regulatory Commission (NRC) Review and hearings**, which include all estimated costs associated with NRC Review Fees; costs required to answer NRC data requests regarding the COLA, and associated legal fees.

**Land and Right of Way Purchases**, which include the cost of acquiring land for the site as well as land for transmission and railroad right of ways.

**Site Preparation**, which includes costs associated with completing remaining demolition of structures previously constructed as part of the prior Cherokee Nuclear Facility. This category also includes costs associated with ongoing industrial security; utilities; miscellaneous minor site maintenance; and funds required by the Department of Homeland Security for nuclear power plant licensees and applicants. Also included are costs associated with designing rail, water, and sewer upgrades for the facility prior to the point of awarding bids to contractors.

**Project Planning and Engineering**, which includes costs associated with developing an engineering, procurement, and construction contract with Westinghouse Electric Corporation - Shaw Stone and Webster (“Westinghouse/Shaw”), the consortium delivering the AP 1000 nuclear units. This category of costs also covers site-specific engineering; construction planning; and some limited initial payments on long-lead material and equipment items such as: Reactor Coolant Pumps, Containment Vessel, Reactor Pressure Vessel, Steam Generators, Control Rod Drive Mechanisms, and Condenser Circulating Water Piping.

**G. EVIDENCE AND CONCLUSIONS – LONG LEAD PROCUREMENT OBLIGATIONS**

**FINDING No. 8**

The evidence in support of this finding is based upon the application and the testimony of Duke Energy Carolinas witness Jamil.

S.C. Code § 58-33-220(12) defines “preconstruction costs” as follows:

means all costs associated with a potential nuclear plant incurred before issuance of a final certificate under the Utility Facility Siting and Environmental Protection Act, including, without limitation, the costs of evaluation, design, engineering, environmental and geotechnical analysis and permitting, contracting, other required permitting including early site permitting and combined operating license permitting, and initial site preparation costs and related consulting and professional costs, and shall include AFUDC associated with those costs.

Witness Jamil testified that Duke Energy Carolinas believes that payments required to ensure the timely fabrication and delivery of long-lead procurement items such as Reactor Coolant Pumps, Containment Vessel, Reactor Pressure Vessel, Steam Generators, Control Rod Drive Mechanisms, and Condenser Circulating Water Piping constitute “preconstruction costs” because such payments are required “pre-construction” obligations to ensure that the Lee Nuclear Station can remain an option for commercial operation in the 2018 timeframe. (Tr. Vol. 4, p. 385). The Company does not currently know with precision which items would require long-lead procurement decisions, how far in advance those decisions would have to be made, or the amount or timing of advance obligations that would be required to secure and maintain a place in the fabrication queue for those items. (Tr. Vol. 4, p. 385-386). However, Mr. Jamil testified that Duke Energy Carolinas’ cost estimate and development schedule anticipates the Reactor Coolant

Pumps, Containment Vessel, Reactor Pressure Vessel, Steam Generators, Control Rod Drive Mechanisms Condenser Circulating Water Piping, plus numerous other power plant components will need to be ordered and certain advance payments made well before on-site construction activity actually commences on the project. (Tr. Vol. 4, p. 386). Witness Jamil testified that the Company needs the flexibility to potentially lock in a place in line to guarantee that it can procure certain long lead items due to the global movement to construct nuclear and other power plants. (Tr. Vol. 4, p. 426-427). Witness Jamil testified that such long lead payments to secure a place in line would eventually be applied to the cost of the long lead component, or serve as a “down payment.” (*Id.*; p. 430-431). The Company submitted Exhibit 3 which listed a breakdown of its estimate of \$230 million in pre-construction costs. That exhibit shows that the Company estimates that payments for long lead items will be in the range of \$10 million through 2009.

We agree with Duke Energy Carolinas that long-lead procurement items qualify as “preconstruction costs” under S.C. § 58-33-220(12) and that it is prudent for Duke Energy Carolinas to incur such preconstruction costs as set forth in the Company’s project development application.

#### **H. EVIDENCE AND CONCLUSIONS – PUBLIC INTEREST**

##### **FINDING No. 9**

The evidence in support of this finding is based upon evidence in support of the previous findings, the 2007 Duke Energy Carolinas Annual Plan and the testimony of Duke Energy Carolinas witness Jamil, Ruff, Hager and Wright; ORS witness Phillips; and FoE witness Bradford, as well as the totality of the record before the Commission.

FoE witness Peter A. Bradford testified in opposition to the Company's application and to his opinion that the ability to obtain an early determination of prudence and reasonableness of costs and preoperational rate increases in this proceeding confers an "extraordinary benefit" to Duke Energy Carolinas. (Tr. Vol. 3, p. 219). He also explained why he believes that a decision as to the prudence and reasonableness of costs cannot be made without the Company providing an estimated cost for the Lee Nuclear Station and evidence of the likely impact of that cost on the rates to be paid by its customers. (Tr. Vol. 3, p. 221-223). He testified that the statutory procedures allowing for review and assurance of project development costs shifts risks from the Company's investors to its rate payers. (Tr. Vol. 3, p. 223).

In his rebuttal testimony, Duke Energy Carolinas witness Dr. Julius A. Wright testified to his disagreement with Mr. Bradford's opinion that approval of the Company's application would harm its customers. First, Dr. Wright explained how the statutory process outlined in S.C. Code Ann. § 58-33-225, which is the governing statute in this proceeding, as well as the State's other electric resource planning and determination of need for generating facility statutes and rules adequately address all the issues Mr. Bradford raises. (Tr. Vol. 4, p. 522-523). Dr. Wright testified to his opinion that these provisions adequately protect the interest of ratepayers, and noted that the preamble of the Base Load Review Act declares that the "Act [is] to protect South Carolina ratepayers." (Tr. Vol. 4, p. 522-23). Dr. Wright went on to point out that while Mr. Bradford discusses cost recovery at length in his testimony, he loses sight that the Company's application in this proceeding is an interim regulatory step and that the issue of recovery of project development costs is reserved for a separate proceeding as is the



issue of recovery of plant construction costs. (Tr. Vol. 4, p. 523-24.). Moreover, Dr. Wright testified that if this Commission does not approve the prudence of Duke Energy Carolinas' decision to incur project development costs for the Lee Nuclear Station, customers could be harmed because this greenhouse gas emission-free base load generation resource could effectively cease to be an option for Duke Energy Carolinas' customers in the 2018 timeframe. (Tr. Vol. 4, p. 516-517).

As mentioned above, Witness Bradford testified that South Carolina's statutorily-defined procedures for electric generation resource planning and particularly this docket related to nuclear generation project development costs provide Duke Energy Carolinas with an "extraordinary benefit." This claim apparently is based upon Mr. Bradford's contention that a finding in this proceeding that it is prudent for the Company to incur project development costs would then allow the recovery of "a very substantial portion" of the planned construction costs of the plant before the plant ever operates. (Tr. Vol. 3, p. 220). We reject this interpretation of South Carolina law from Mr. Bradford.

Contrary to Mr. Bradford's claims, there is ample opportunity for this Commission and other parties to review and dispute specific pre-construction costs. The Company has filed, pursuant to S.C. Code Ann. § 58-33-225, a filing that establishes the need for the Company to continue its project development of the Lee Nuclear Station as a resource option to meet customers' demand for power and the prudence of the decision to incur pre-construction costs for the facility. Contrary to Mr. Bradford's assertions in his testimony, in issuing its project development cost order in this proceeding, the Commission "may not rule on the prudence or recoverability of specific items of cost..." S.C. Code Ann. § 58-33-225(D). In a future proceeding, however, "the project

development costs “must be properly included in the utility’s plant-in-service and must be recoverable fully through rates in future proceedings,” unless the record shows in future proceedings that individual items of cost were imprudently incurred or that “other decisions subsequent to the issuance of a project development order were imprudently made considering the information available to the utility at the time they were made.” S.C. Code Ann. § 58-33-225(E).

Dr. Wright outlined in his testimony how the South Carolina statutory procedures provide sufficient oversight and protect customers from imprudent and unreasonable nuclear generation costs (Tr. Vol. 4, p. 521-525). If the company decides to proceed with construction, Duke Energy Carolinas would file a combined Base Load Review Application and Utility Facility Siting and Environmental Protection Act application pursuant to S. C. Code Ann. § 59-33-230. The Company is required to file quarterly reports with ORS pursuant to S.C. Code Ann. § 58-33-277.

The Commission finds that at every step of this process there are sufficient protections for the ratepayers of South Carolina through both hearings and oversight from this Commission, ORS, and intervention from other parties. The Company’s application before the Commission in this proceeding is not about the consideration of construction costs or the recoverability of specific project development costs, as Mr. Bradford’s testimony seems to indicate. Rather, the issue to decide in this proceeding is whether or not this Commission agrees with Duke Energy Carolinas that it is prudent to continue to incur project development costs related to the Lee Nuclear Station.

Company witness Ruff testified that Duke Energy Carolinas would not file an application with the Public Service Commission of South Carolina for a CPCN for the Lee Nuclear Station until the second quarter of 2008 at the earliest. (Tr. Vol. 4, p. 326). The process in place in South Carolina includes the filing of information showing the anticipated construction schedule, anticipated components of capital costs, projected effect of investment on the utility's overall revenue requirement for each year during construction, information identify units, suppliers and the basis for their selection, qualifications of principal contracts and suppliers; anticipated in-service expenses and other information required by S.C. Code Ann. § 58-33-250. The Commission finds that this process will provide an adequate review of all costs associated with the construction of the proposed Lee Nuclear Station should it proceed, and concludes, as did the General Assembly, that it will adequately protect the interest of customers. We agree with Dr. Wright that the primary purpose of the Legislature was the protection of South Carolina's ratepayers from excessive or imprudent costs coupled with a reasonable process for monitoring the ongoing construction of a nuclear facility. At the same time, in adopting the S.C. Base Load Review Act, S.C. Code Ann. § 58-33-210 to 58-33-298, the Legislature had the additional purpose of providing a more effective and efficient regulatory process that would encourage the development of nuclear generation.

Contrary to much of Mr. Bradford's testimony in this case, this hearing is not about construction costs or prudence reviews of those costs, rather it is about planning electric generation for decades to come. In a high growth area like South Carolina, the planning and construction of base load generating facilities is a process that requires commitments and planning years ahead of plant operations. This is a burdensome

responsibility, but history has proven that this Commission has undertaken this responsibility with consistently positive results. Now, as in the late 1970s and 1980s, this Commission and this Company are faced with the prospect of planning, approving, and building significant levels of new base load generating facilities. This proceeding is about whether or not this nuclear option should be kept open as a potential generation resource to serve this State in the 2018 timeframe – the point in time when current studies indicate this generation would be needed.

ORS supports approval of Duke Energy Carolinas' decision to incur preconstruction costs. ORS Witness Phillips testified that based on an analysis of the available information, knowledge of the Duke system, and a review of information regarding the options available, it is reasonable and prudent for Duke to preserve nuclear as a resource option. (Tr. Vol. 4, p. 485).

Witness Jamil testified that Duke Energy Carolinas is currently evaluating updated, detailed cost information received from the Westinghouse/Shaw consortium that is delivering the selected AP 1000 technology for the Lee Nuclear Station. (Tr. Vol. 4, p. 384). The Company is working to review this information, as well as the design, engineering and construction costs of the project that will be borne directly by Duke Energy Carolinas. (*Id.*). In addition, the Company has planned an independent third party assessment of the cost information, and expects to complete its cost review in the summer of 2008. (Tr. Vol. 4, p. 385). Witness Jamil testified that Duke Energy Carolinas expects its overall cost estimate for the Lee Nuclear Station to increase as this information is refined during the development process. (*Id.*). Ms. Hager testified that once the updated review of cost information is completed, it will inform the Duke Energy

Carolinas 2008 IRP. (Tr. Vol. 2, p. 134). Witness Jamil explained that Duke Energy Carolinas will retain flexibility to modify the development plans based upon additional information gained during the development process. (Tr. Vol. 4, p. 388).

The Commission received confidential cost estimate information from Duke Energy Carolinas as to the total costs of the Lee Nuclear Station during the hearing and has considered these trade secrets in reaching its decision in this matter.

As discussed previously, the Commission finds that the continued development of the Lee Nuclear Station and the nuclear generation option is beneficial for Duke Energy Carolinas' customers and for the future of the State of South Carolina. Having reliable supplies of electricity is essential to creating an environment that will support the State's growth and the well being of its citizens. Continuing the development of the Lee Nuclear Station ensures that this important potential source of greenhouse gas emission-free base load generation will remain an option to meet the future needs of Duke Energy Carolinas' customers.

The Commission finds that Duke Energy Carolinas has met its burden of establishing the reasonableness and prudence of its decision to incur project development costs for the Lee Nuclear Station by a preponderance of the evidence. The Commission therefore approves the Company's application as filed, and approves the Company's decision to incur preconstruction costs for the Lee Nuclear Station.

IT IS, THEREFORE ORDERED, ADJUDGED, AND DECREED THAT:

1. The Application filed in this docket should be, and the same is hereby, approved;
2. Duke Energy Carolinas' decision to incur Lee Nuclear Station pre-construction development costs as described in its application, testimony and exhibits is reasonable and prudent.
3. Duke Energy Carolinas' is authorized to incur the South Carolina allocable share of the Lee Nuclear Station project development costs as described in its application, testimony and exhibits.
4. For ratemaking purposes, the issuance of this Order does not constitute approval of the reasonableness or prudence of specific project development activities or recoverability of specific items of cost, and the approval and grant contained herein is without prejudice to the right of any party to take issue with the treatment of specific project development costs.
5. This Order shall remain in full force and effect until further Order of the Commission.

BY ORDER OF THE COMMISSION:

This the \_\_\_\_ day of June, 2008.

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G. O'Neal Hamilton, Chairman

ATTEST:

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G. Robert Moseley, Vice Chairman

BEFORE  
THE PUBLIC SERVICE COMMISSION  
OF SOUTH CAROLINA  
DOCKET NO. 2007-440-E

In the Matter of

Application of Duke Energy Carolinas, LLC )  
for Approval of Decision to Incur Nuclear )  
Generation Pre-Construction Costs For the )  
Lee Nuclear Station in Cherokee County )

**CERTIFICATE OF SERVICE**

This is to certify that I, Leslie Allen with the law firm of Robinson, McFadden & Moore, P.C., have this day caused to be served upon the person(s) named below the **Proposed Order Approving Application of Duke Energy Carolinas, LLC's Decision to Incur Nuclear Generation Pre-Construction Costs** in the foregoing matter by causing a copy of same to be placed in the United States Mail, postage prepaid, in an envelope addressed as follows:

Nanette S. Edwards, Esquire  
C. Lessie Hammonds, Esquire  
Office of Regulatory Staff  
P.O. Box 11236  
Columbia, SC 29211

Scott A. Elliott, Esquire  
SC Energy Users Committee  
Elliott & Elliott, PA  
721 Olive Avenue  
Columbia, SC 29205

Robert Guild, Esquire  
Friends of the Earth  
314 Pall Mall  
Columbia, SC 29201

Dated at Columbia, South Carolina this 23rd day of May, 2008.

  
\_\_\_\_\_  
Leslie Allen